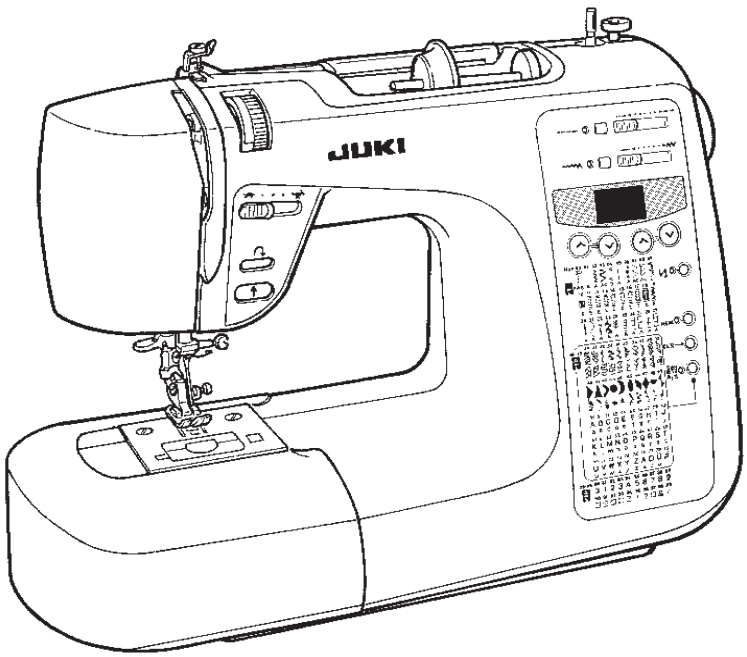
JUKI®

COMPUTER SEWING MACHINE

HZL-E80

SERVICE MANUAL



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⚠ WARNING :

To avoid the risk of fire, electric shock, injury to persons or damage to components, especially keep the following:

- When disassembling, assembling or adjusting the sewing machine, remove the power plug.
- When assembling, be careful about the electrical cord being caught with other components, damage to the covered parts of the cord or miswiring.
- When replacing the part(s), use the genuine part(s).

[1] PRODUCT SPECIFICATIONS FOR HZL-E80

[Power source]

- **220-230V AC common to 50/60 Hz**

[Power consumption]

- **85W (Lamp : 240V/15W)**

[Dimensions and weight]

- **Dimensions : Main unit : 400 mm (W) X 175 mm (L) X 280 mm (H)**
  Case set : 515 mm (W) X 285 mm (L) X 400 mm (H)
- **Weight : Main unit : 8.2 kg**
  Case set : 9.2 kg

[Speed control]

- **Slide speed control**

  Straight stitching 115 to 900 rpm
  Pattern sewing 115 to 750 rpm
  Bobbin winding 115 to 900 rpm
  Reverse stitching 115±10 rpm (at low speed)

- **Controller**

  The slide speed control is effective even when the controller is used.
  It is possible to stop the machine only when the stop button is used.
  Number of revolutions is the same as the slide speed control above.

- **Safety control**

  If the sewing machine motor shaft is locked, the power supplied to the motor is stopped after approximately 0.5 to 0.6 seconds.
  If the motor becomes extraordinarily hot, the thermal switch built in the motor stops the power supplied to the motor. It is possible for the motor to start again after natural cooling.
  The machine stops with its needle down when sewing is completed.

[Stop position]

- **The machine stops with its needle down except buttonholing.**
- **The needle moves up when it is in down position and a pattern is selected.**
- **The machine stops with its needle up when the reverse stitching is completed.**
- **The machine stops with its needle up when the bobbin is to be wound.**
- **The machine stops with its needle up when the machine starts with the presser lifting lever raised.**

[Zigzag width]

- **Max. 7 mm depending on the patterns.**
  When zigzag width is changed with the manual lever, buzzer sounds at the place where zigzag width is changed and zigzag width amount is displayed on the numeral display LED for 5 seconds.

[Feed amount]

- **Feed amount changes in increments of 0.2 mm by the variable resistor for manual adjustment.**
  When feed amount is changed with the manual lever, buzzer sounds at the place where feed amount is changed over and feed amount is displayed on the numeral display LED for 5 seconds.
  2.4 mm for straight stitching when the feed is set to “Auto”.

[Pattern selection]

- Shift selection by the switch mounted on the panel.
- The pattern changes continuously at a period of 0.5 seconds when the switch is held pressed for 0.5 seconds or more.
- The pattern is changed over to the pattern adjustment sewing pattern (darning) by operating start button, power switch and stitch length manual switch for the service personnel. (For the details, refer to the item “5-1-18 Service mode”.)

[Number of patterns]

- Practical patterns : 30
- Continuous pattern : 40
- Letters, etc. : 80

Total : 150

[Buttonhole]

- 8 kinds : Bartacking on both sides of buttonholes
  Straight buttonholes
  Round end buttonholes
  Eyelet buttonholes (1)
  Eyelet buttonholes (2)
  Eyelet buttonholes (3)
  Stretch buttonholes (A)
  Stretch buttonholes (B)

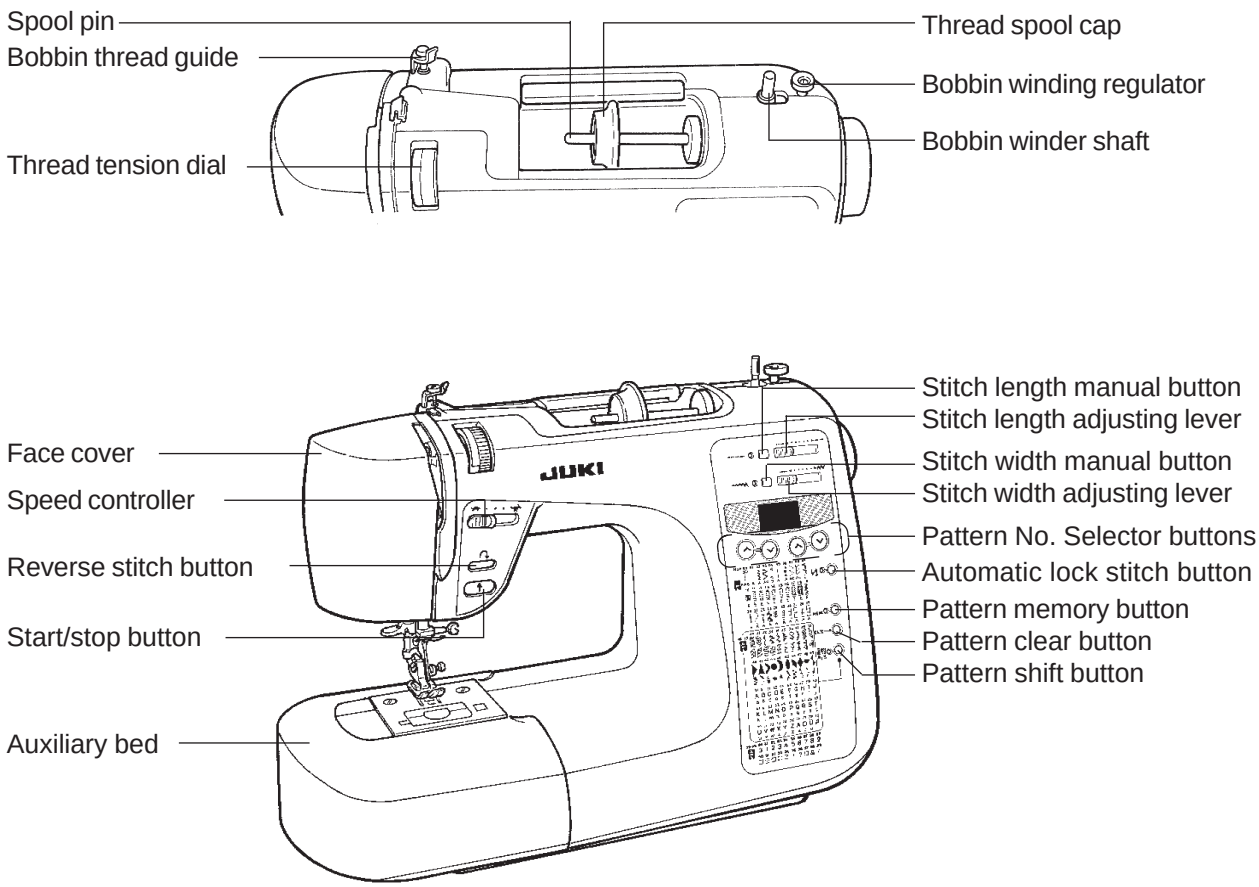
[Automatic needle threading mechanism]

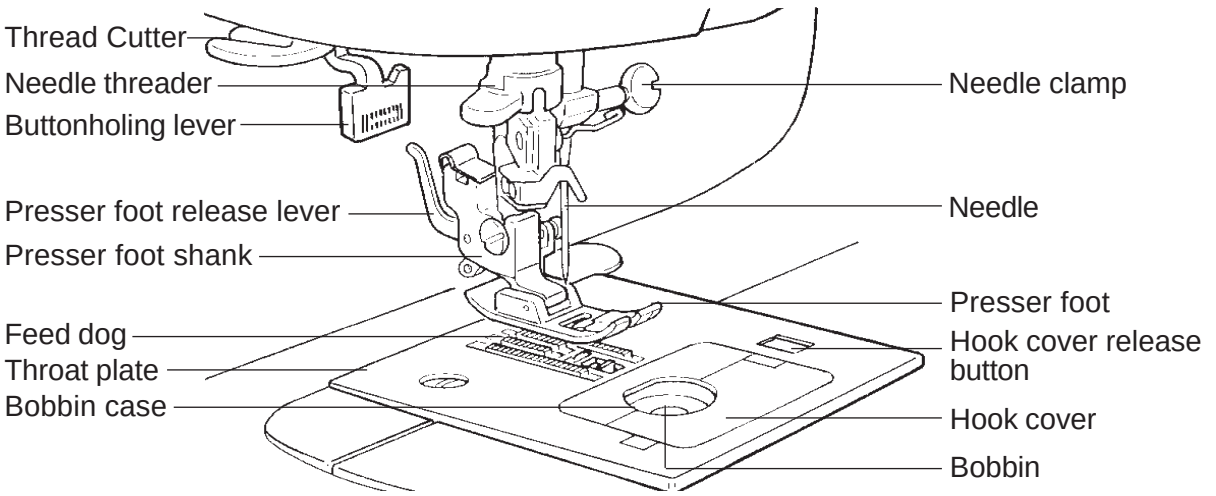
- Press down the threading lever and turn the hook section by hand, then the lever automatically returns to the home position.

[Automatic lock stitch]

- Sewing speed : 115 rpm (at low speed)
- Straight stitching : 3 stitches forward and 3 stitches backward at the start of sewing (S/S-SW)
  3 stitches backward and 3 stitches forward at the end of sewing (REV-SW)
- Max. feed amount : 2.6 mm
  In case of less than 2.6 mm, the stitch length is same as that of forward.
- Sewings other than straight stitching : 3 stitches backward both at the start of sewing (S/S-SW) and at the end of sewing (REV-SW)
- Feed amount : Fixed at 0.6 mm (dumpling lock stitching)

[2] NAMES OF THE RESPECTIVE COMPONENTS

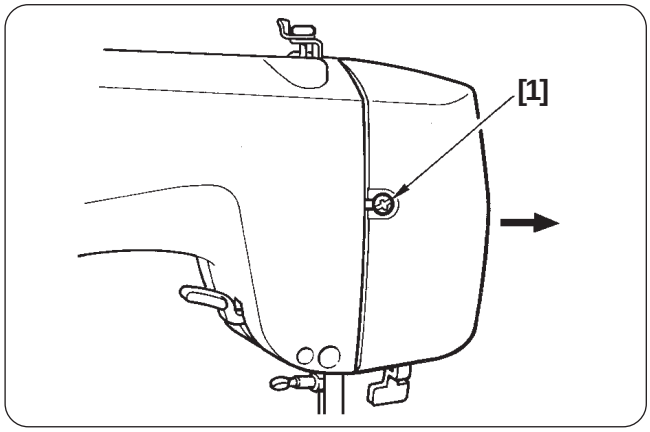



Thread Cutter
Needle threader
Buttonholing lever
Presser foot release lever
Presser foot shank
Feed dog
Throat plate
Bobbin case
Needle clamp
Needle
Presser foot
Hook cover release button
Hook cover
Bobbin

[3] HOW TO REMOVE THE OUTER COMPONENTS

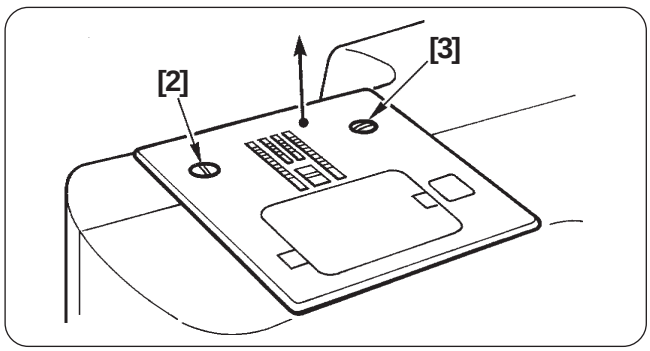
1. Face cover

○ Remove setscrew [1] in the face cover and remove the face cover.



2. Throat plate

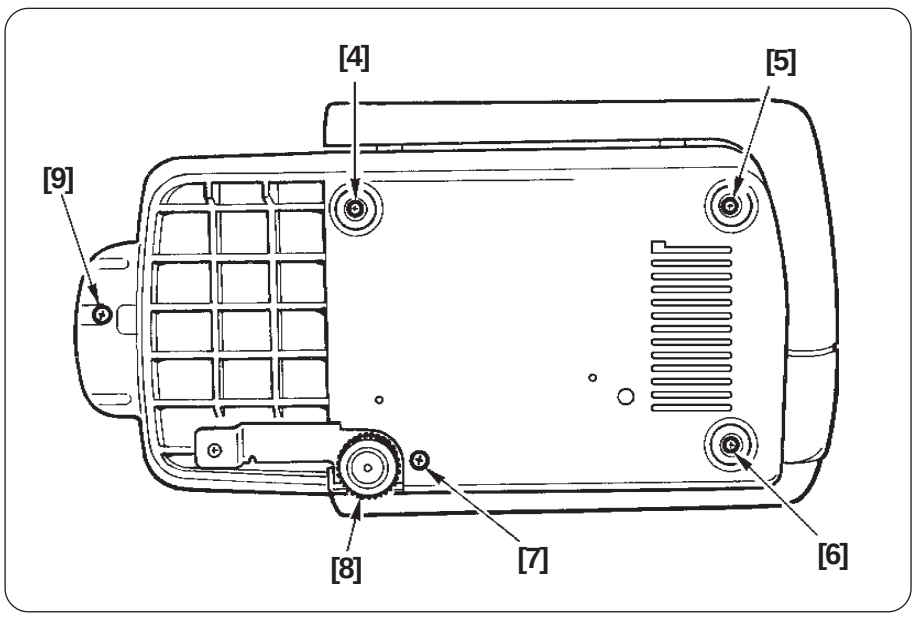
○ Remove setscrews [2] and [3] in the throat plate and remove the throat plate.



3. Base plate and free arm bottom cover

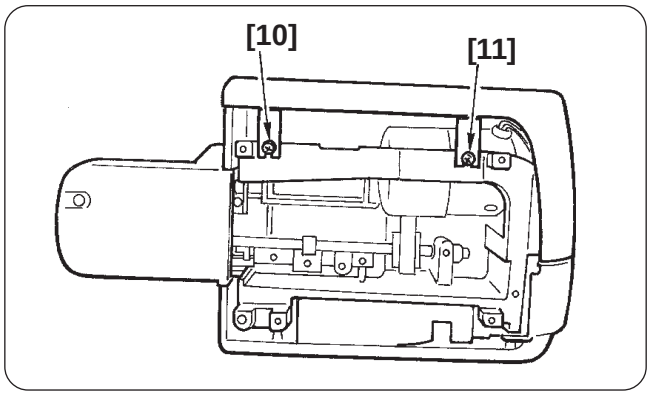
○ Remove setscrews [4] , [5] and [6] in the rubber cushion of the base plate, setscrew [7] of the base plate, and height adjusting screw [8] . (Base plate is removed.)

○ Remove setscrew [9] in the free arm bottom cover.

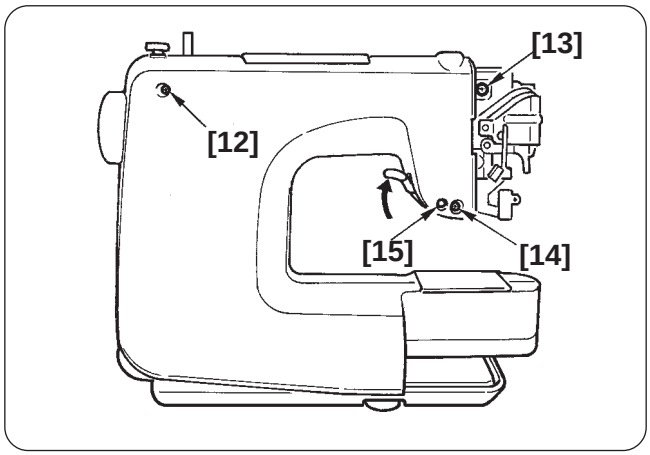


4. Front panel and rear panel

○ **Remove setscrews (bottom) [10] and [11] in the front panel (Mas. asm.).**



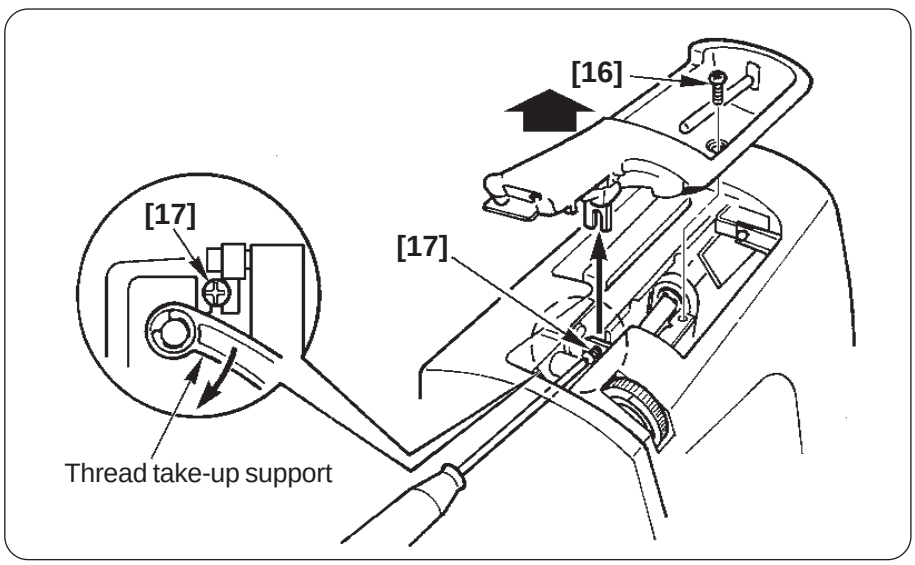
○ **Remove setscrews [12] , [13] and [14] in the rear panel (asm.) and setscrew (rear) [15] in the front panel (Mas. asm.). (Lift the presser lifting lever when removing screw ‡N .)**



5. Thread spool cover

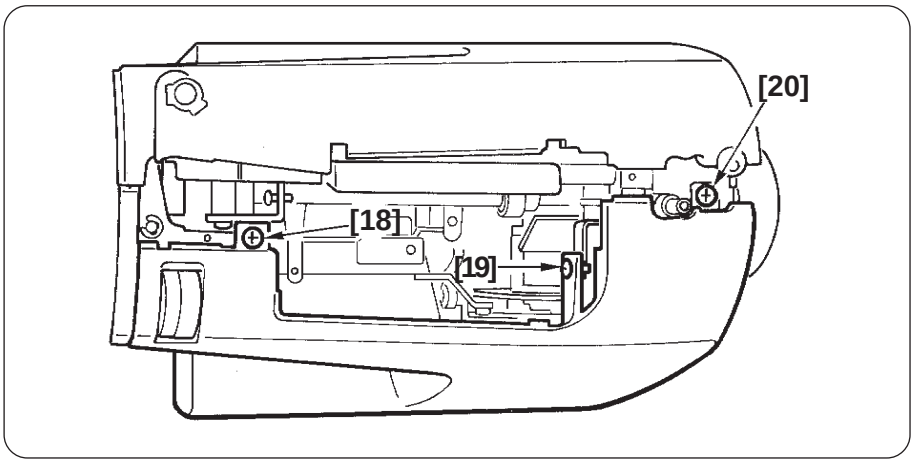
○ **Remove setscrew (upper) [16] in the thread spool cover and setscrew (side) [17] in the thread spool cover. (Lower the thread take-up support and insert a screwdriver from the face cover side to remove setscrew (side) [17] in the thread spool cover.)**

○ **Open the rear panel in the rear and remove the thread spool cover upward.**



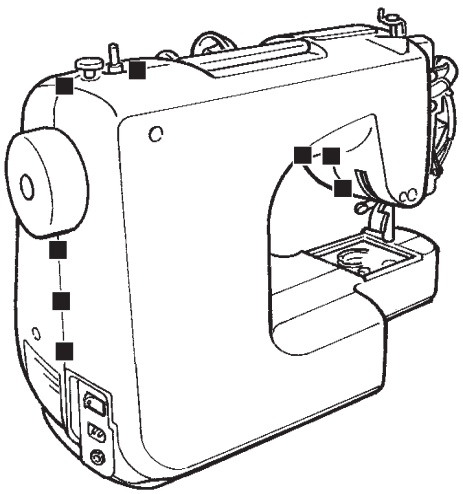
6. Front panel

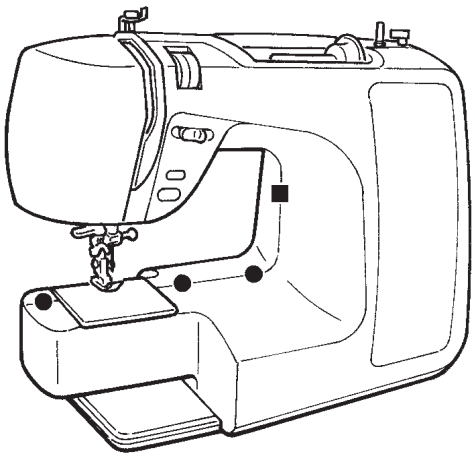
○ **Loosen setscrew (front) [18] in the front panel (Mas. asm.), setscrew (right) [19] in the front panel main unit and setscrew (bobbin winder) [20] in the front panel main unit after removing the thread spool cover.**



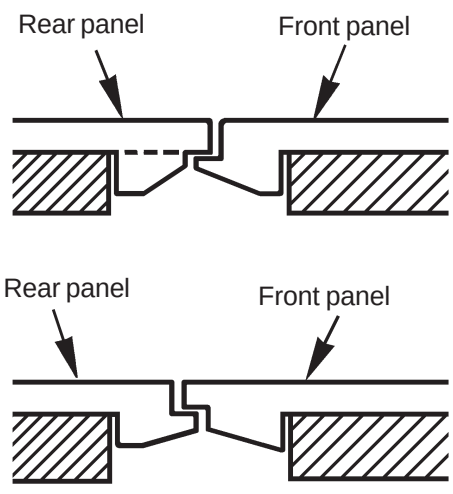
7. Remove front panel and rear panel from frame.

○ **There are hooking sections on the rear sides of both front and rear panel as illustrated in the figures below. They are "engaging with the frame holes" and "engaging with the respective covers".**

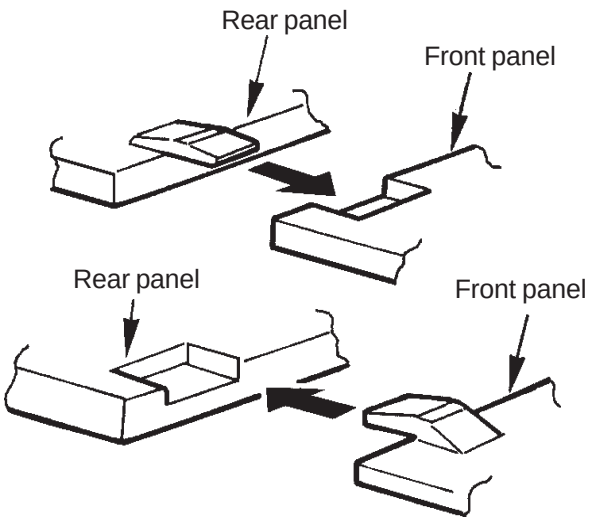




● **mark section**



■ **mark section**

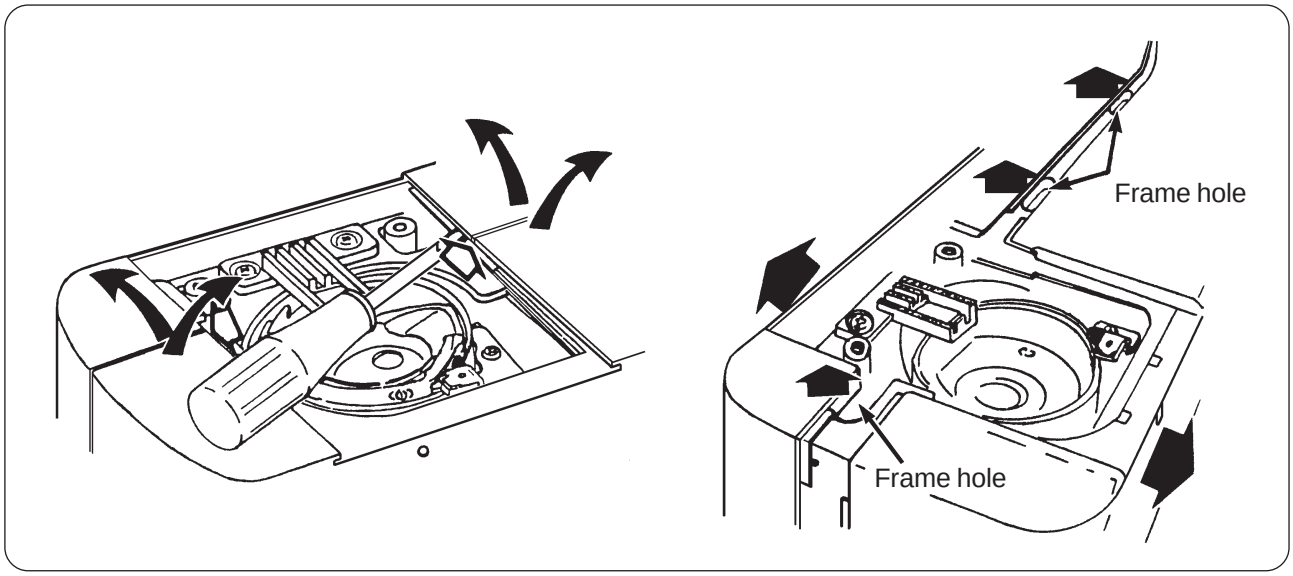


○ **On condition that the presser lifting lever is lowered, open a little bit the joint section of the front and rear covers as illustrated in the figure below.**

(Rear panel)

- Remove the convex sections of the front panel and the rear panel from the frame so as to move the convex sections up from the frame as illustrated in the figure below. Then open the respective panels.
- Open the right side (side of presser bar and face plate) of the rear panel and the joint section of the whole panel is removed.

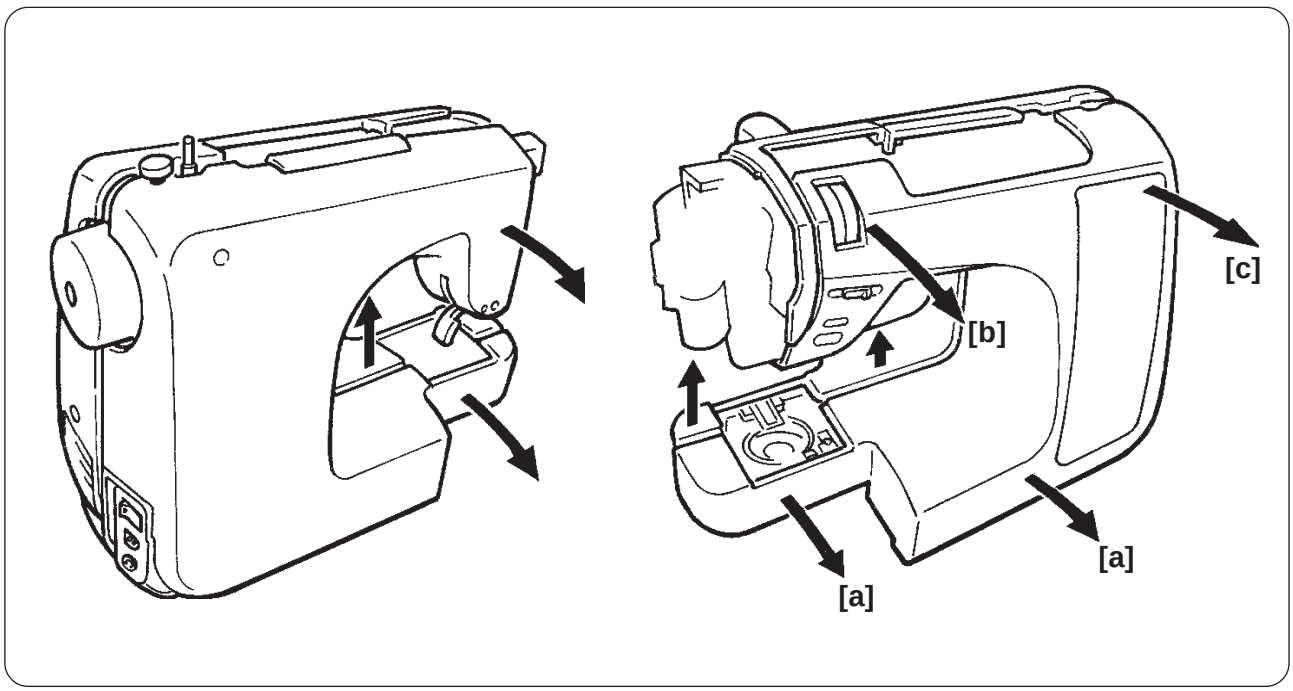
Note) Remove the rear panel so as to bring the rear panel near the hand wheel side at the place of the power switch installing plate since there is a convex shape on the rear panel.



(Front panel)

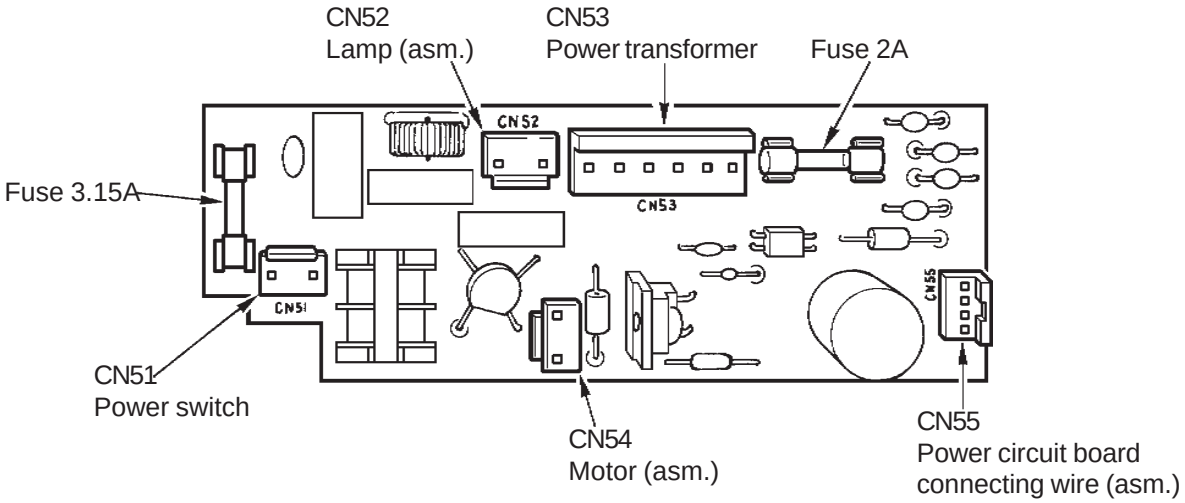
- Remove the convex sections of the front panel and the rear panel from the frame so as to move the convex sections up from the frame in the same way as the rear panel above. Then open the panels.

[a] Draw the free arm section toward you. (Lower section of the front panel)
Then remove in the order below.
[b] Thread tension section
[c] Bobbin winder base section

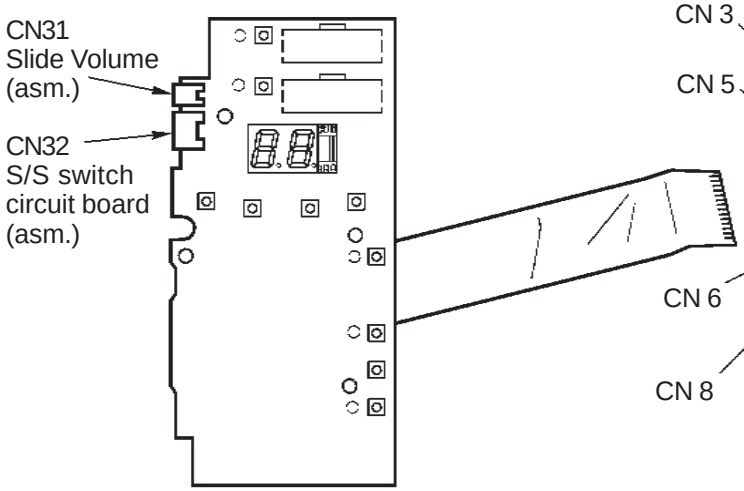


[4] CIRCUIT BOARD CONNECTION DIAGRAM

[Power circuit board]



[Display circuit board]



[Microcomputer circuit diagram]

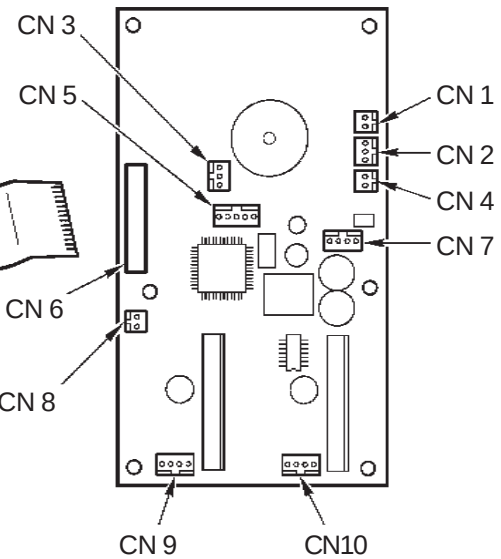
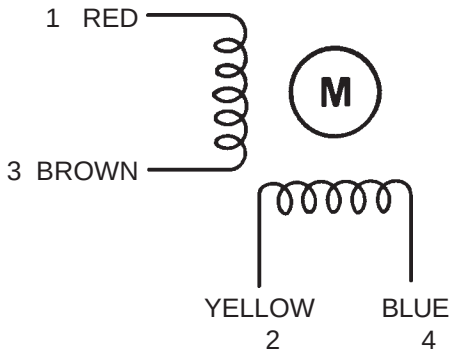


Table of microcomputer circuit board connectors

Connector No.	Connection	Connector No.	Connection
CN 1	Bobbin winder switch (asm.)	CN 6	Display circuit board (asm.)
CN 2	BH switch base (asm.)	CN 7	Power circuit board connecting wire (asm.)
CN 3	MP detecting circuit board (asm.)	CN 8	Controller receptacle (asm.)
CN 4	One-stitch switch (asm.)	CN 9	Needle throw STM (asm.)
CN 5	Main shaft detecting circuit board (asm.)	CN 10	Feed STM (asm.)

Connection diagram

Feed and needle throw STM



[5] ADJUSTMENT OF THE RESPECTIVE COMPONENTS

5-1-1 Adjusting the needle bar height

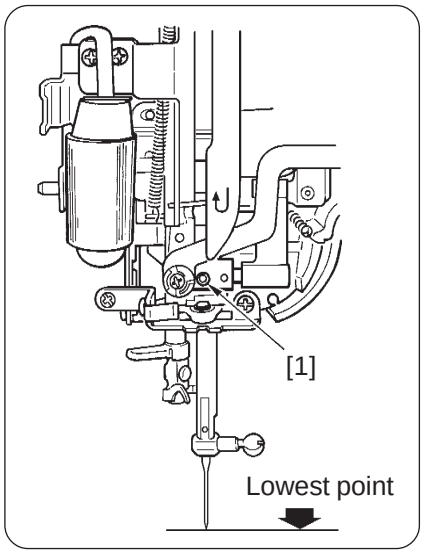
○ Remove the face cover.

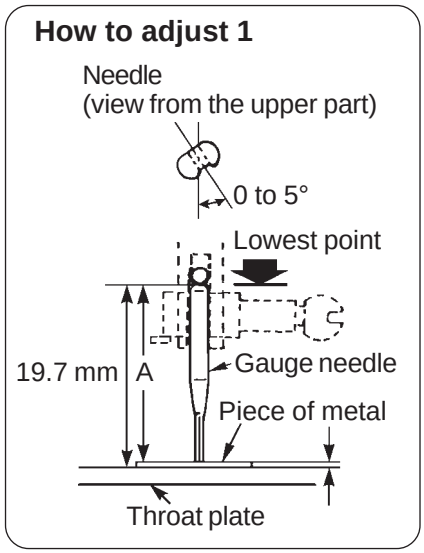
Adjustment
- Dimension from the bottom end of the needle bar pin to the top surface of the throat plate : 19.7 mm
- The needle eyelet inclines to the right by 5° when a needle is attached.

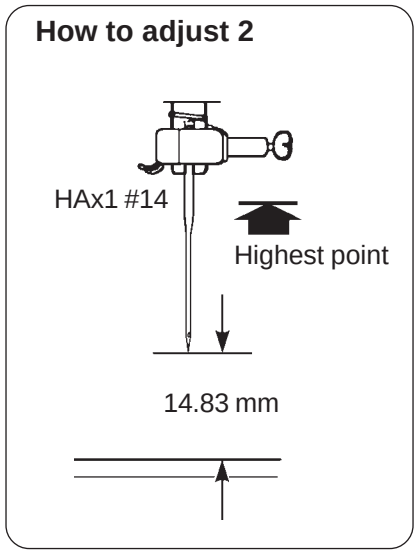
How to adjust 1
1. Make a gauge needle which has cut a household needle, HA X 1 to dimension A and attach it to the needle bar.
2. Prepare an appropriate piece of metal as thick as B. (A = 19.7 mm - B)
3. Bring the needle bar to the lowest point of its stroke and slightly loosen setscrew [1] in the needle bar connection to the extent that the needle bar does not slip down.
4. Place the piece of metal on the throat plate, move the needle bar up or down by hand so that the cut section of the gauge needle aligns with the top surface of the piece of metal, and turn the needle bar by 5° as illustrated in the figure.
5. Temporarily tighten setscrew [1] and securely tighten it after re-confirming the adjustment.

How to adjust 2
1. Attach a household needle, HA X 1 #14 to the needle bar and adjust the height of the needle bar in the same way as the adjusting procedure above so that a distance of 14.83 mm is provided between the top surface of the throat plate and the tip of the needle when the needle bar is in the highest point of its stroke.

* Setscrew [1] can be loosened at the position where the needle bar is in the lowest point of its stroke.



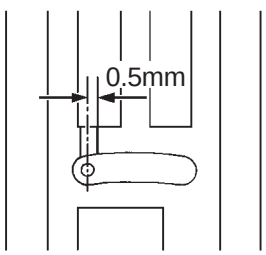


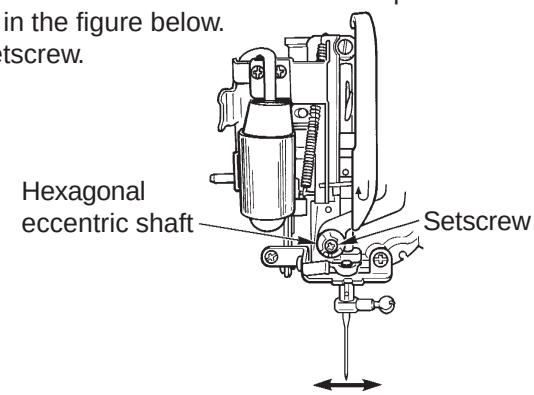


5-1-2 Adjusting the zigzag width needle entry position

○ Remove the face cover.

How to adjust
1. Select the zigzag pattern (zigzag width 7 mm) after turning the power switch ON.
2. Adjusting the needle entry position
   Loosen the hexagonal eccentric screw and turn the hexagonal eccentric shaft to adjust so that the tip of the needle is located in the position of 0.5 mm on the right side from the center of the groove of left stitch base line of the throat plate when the zigzag width is 7 mm as illustrated in the figure below.
3. After the adjustment, tighten the setscrew.



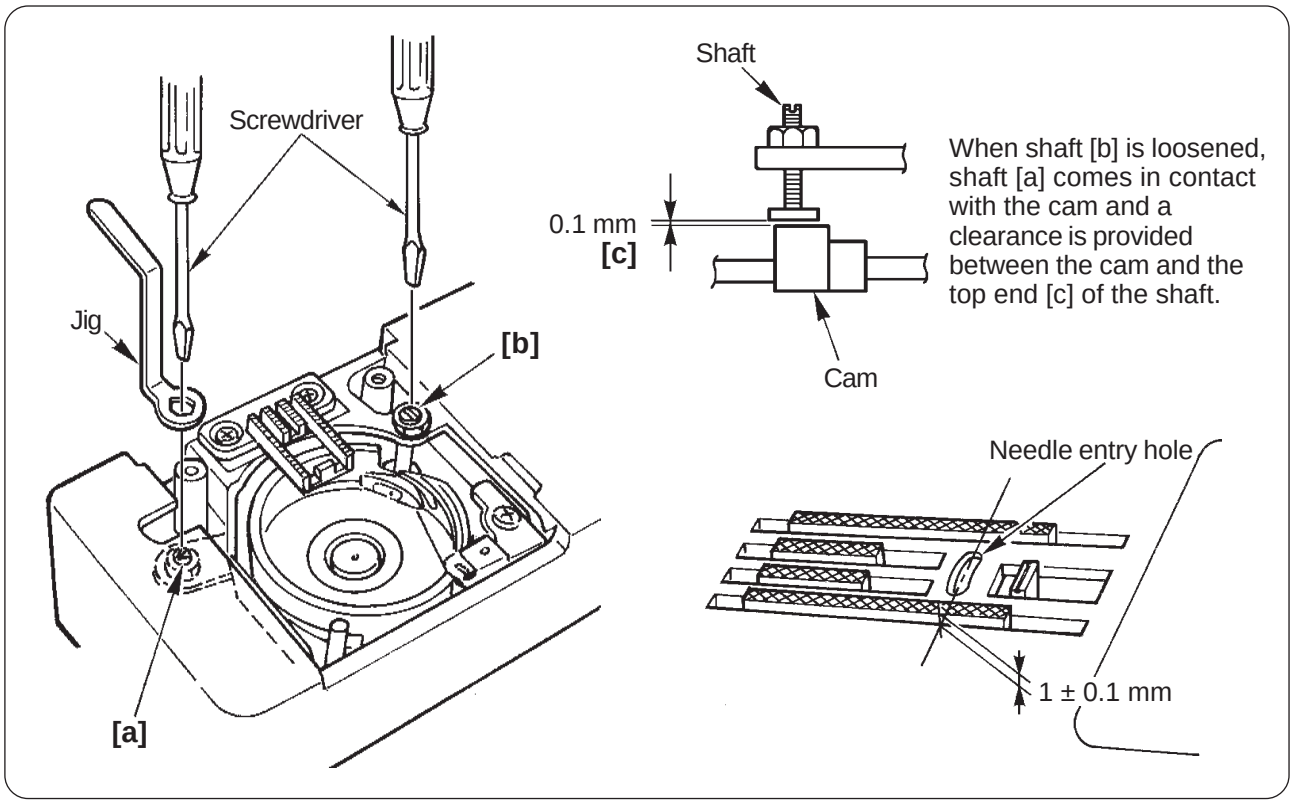


5-1-3 Feed dog height

○ Remove the needle plate.

How to adjust

1. Set the feed amount to “0”.
2. Turn the hand wheel and bring the feed dog to its highest point.
3. Loosen shaft [b] and make a clearance between the cam and the top end of the shaft as illustrated in the figure.
4. Put the exclusive tool (jig) to the nut and loosen shaft [a] on the left-hand side.
5. Turn shaft [a] and adjust so that the height of the feed dog is 1±0.1 mm at the position of the needle entry hole. Then fix the shaft with the nut.
6. Turn shaft [b] and adjust so that a clearance of 0.1 mm is provided between the shaft and the cam. (To such an extent that the shaft slightly comes down when it is pressed from the upper side.)

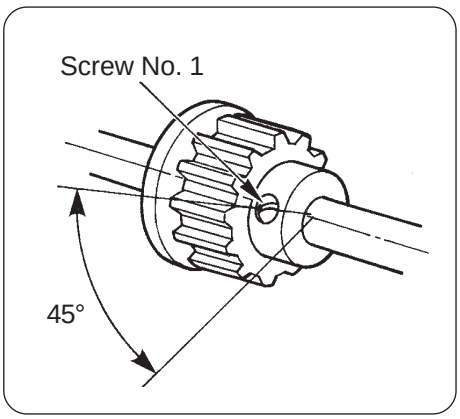

Screwdriver
Jig
[b]
[a]
Shaft
0.1 mm
[c]
Cam
When shaft [b] is loosened, shaft [a] comes in contact with the cam and a clearance is provided between the cam and the top end [c] of the shaft.
Needle entry hole
1 ± 0.1 mm

5-1-4 Timing belt

○ Remove the outer components. (Front cover, rear cover and face cover)

How to adjust

1. Loosen the setscrew in the idler installing base and loosen the tension of the timing belt.
2. Turn the hand wheel and bring the needle bar to the lowest point of its stroke.
3. Turn the hook driving shaft and bring the feed dog to the lowest position of its stroke.
4. Be careful that the aforementioned 2. and 3. conditions do not change, and set the timing belt so that the screw in the main shaft pulley (asm.) faces toward you (screw is temporarily tightened.).

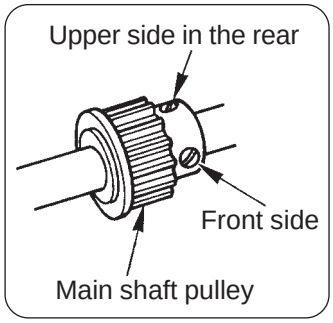


5-1-5 Feed timing

○ After checking the feed dog height and needle bar height, perform this adjustment.
○ The feed timing will affect the tightness of the needle thread.

How to adjust

1. Attach HA x 1 #14 needle.
2. Loosen two screws in the main shaft pulley.
3. Turn the hand wheel and lower the needle bar to align the tip of the needle with the top surface of the throat plate.
4. Turn the hook driving shaft and move the hook driving shaft in the direction of rotation so that the top end of the feed dog aligns with the top surface of the throat plate in the direction where the feed dog comes down from the highest point.
5. Temporarily tighten the screws in the main shaft pulley and check again.
6. After performing this adjustment, check also “Needle-to-hook timing”.



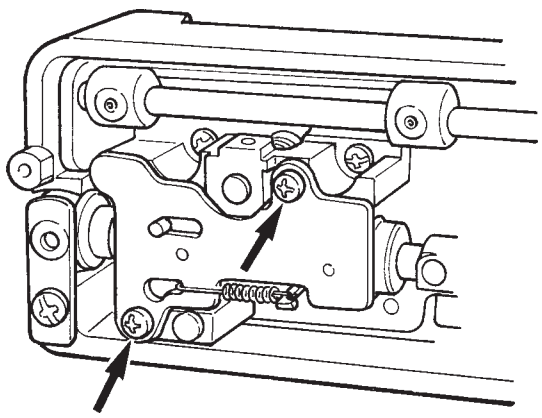
* Adjust so that the tip of the needle aligns with the top surface of the throat plate when the feed dog meets with the top surface of the needle plate. The tolerance is within the range of the tip of the needle to the lower end of the needle hole.

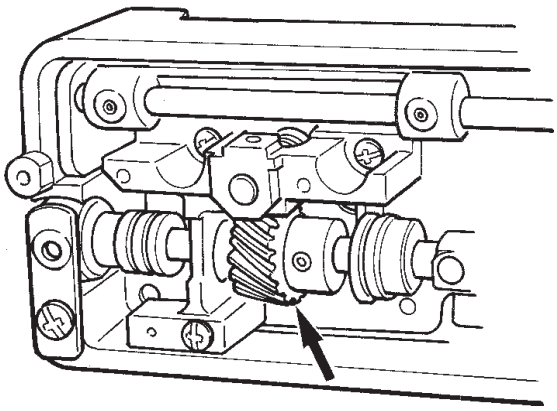
5-1-6 Needle-to-hook timing

○ Remove the throat plate, base plate, free arm bottom cover and DF installing base.

How to check

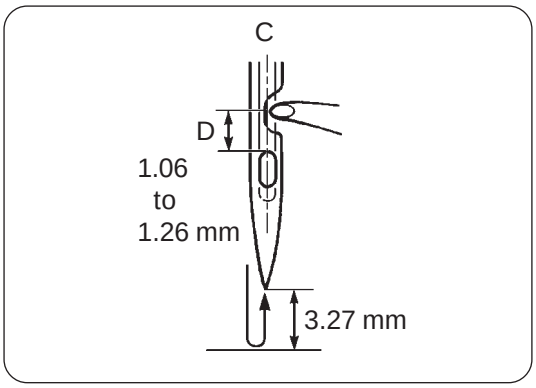
1. First, make sure that the needle entry position and the height of the needle bar have been properly adjusted.
2. Select the straight stitch (left needle position).
3. Then turn the hand wheel by hand to bring the needle bar to the lowest point of its stroke.
4. Further, gradually raise the needle bar by hand and stop it at point C where the center of the needle aligns with the top end of the blade of the hook.
5. At this time, make sure that dimension D from the top end of the blade of the hook to the upper end of the needle eyelet is 1.06 to 1.26 mm. When the dimension is not proper, perform the adjustment below.

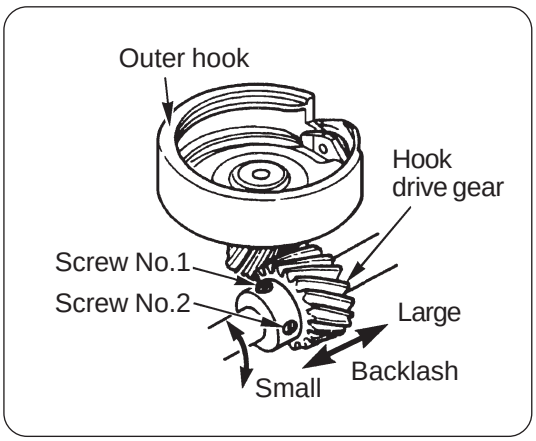




How to adjust

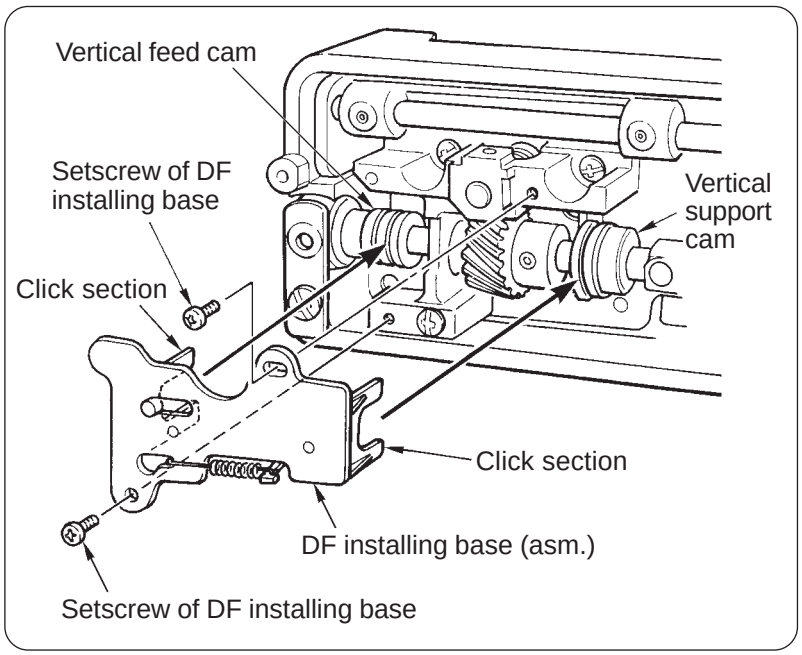
1. Loosen the setscrew in the hook drive gear which is hidden as observed from the bottom side of the sewing machine when the center of the needle aligns with the top end of the blade of the hook.
2. Loosen the setscrew in the hook drive gear and move it in the direction of rotation so that dimension D from the top end of the blade of the hook to the upper end of the needle eyelet is 1.06 to 1.26 mm when raising (3.27 mm) the needle bar from the lowest point of its stroke.
   At this time, the backlash with the gear on the hook side changes according to the position of the hook drive gear in the direction of the hook driving shaft. Adjust the hook drive gear by temporarily tightening the setscrew while taking care of both directions of rotation and shaft.
   Backlash is small. ➡ Torque is large, and rumbling noise occurs.
   Backlash is large. ➡ Clattering noise and skipped stitch occurs.
3. After confirming the adjustment, securely tighten both of the setscrews.
4. Set DF installing base (asm.) while placing click section (2 places) of DF installing base (asm.) in the grooves of vertical feed cam and vertical support cam respectively.
5. Temporarily tighten two setscrews of DF installing base.
6. Adjust DF installing base (asm.) to the position where the clearance between the edge of hook driving shaft metal and the edge of vertical feed cam is 1 to 1.5 mm, and securely tighten two setscrews of DF installing base.

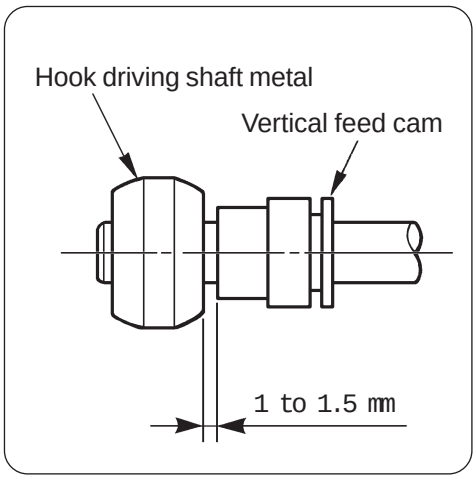




Caution

• DimeAfter adjusting the hook, wipe out the race face of the hook or the bobbin case with alcohol since there may be a case where dirt, oil, grease, etc. stick on the race face of the hook or the bobbin case. Otherwise, running noise, noise from the bobbin case, noise of slip-off of the thread, etc. will happen.





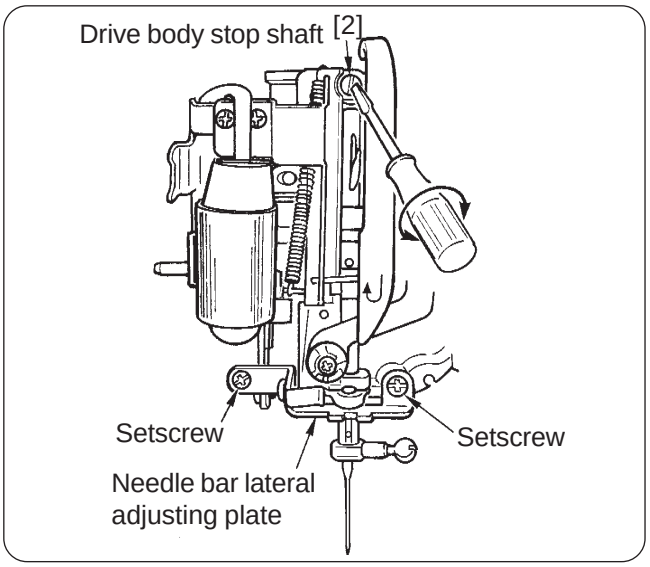
5-1-7 Clearance between the needle and the blade point of the hook

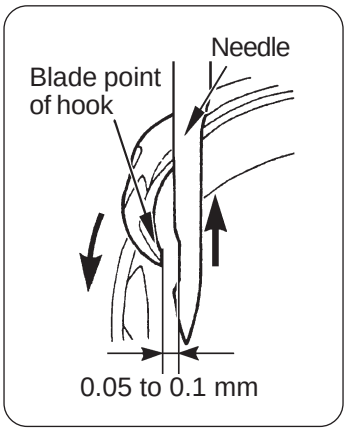
○ Remove the face cover and the needle plate.

How to adjust

1. Set the machine to the zigzag pattern (large) (zigzag width 7 mm). Raise the needle bar by hand from the lowest point of its stroke and make sure that the clearance provided between the blade point of the hook and the needle is 0.05 mm to 0.1 mm at the left and right needle entry points when the blade point of the hook comes to the rear of the center of the needle. (To such an extent that the needle slightly moves when it is lightly pressed with a small screwdriver or the like.)
2. Turn drive body stop shaft [2] and adjust the clearance.
   Tightening direction ➡ Clearance provided between the needle and the hook becomes larger.
   Loosening direction ➡ Clearance provided between the needle and the hook becomes smaller.

* When the clearances at left needle entry point and the right needle entry point are different from each other, loosen setscrews (left) and (right) in the needle bar lateral adjusting plate (asm.) and move the needle bar lateral adjusting plate (asm.) to the left or right to adjust the clearances.





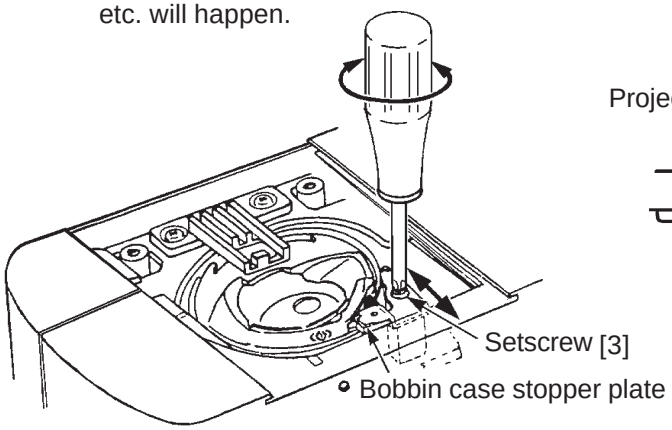
5-1-8 Position of the bobbin case stopper plate

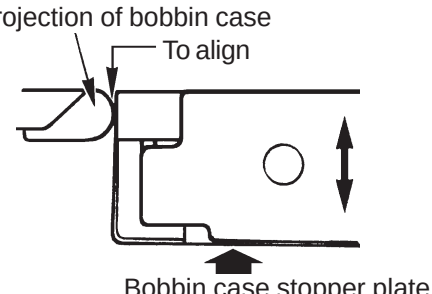
○ Remove the throat plate.

How to adjust

1. On condition that the bobbin case is set to the outer hook, loosen setscrew [3] and determine the longitudinal position of the bobbin case stopper plate so that the rear end of the projection of the bobbin case aligns with the rear end of the plate spring of the bobbin case stopper plate.
   In addition, for the lateral position, make the turn stopper come in contact with the right side as much as the occurrence of the play and fix it with setscrew [3] .

* Wipe out the race face of the hook or the bobbin case with alcohol since there may be a case where dirt, oil, grease, etc. stitck on the race face of the hook or the bobbin case.
  Otherwise, running noise, noise from the bobbin case, noise of slip-off of the thread, etc. will happen.

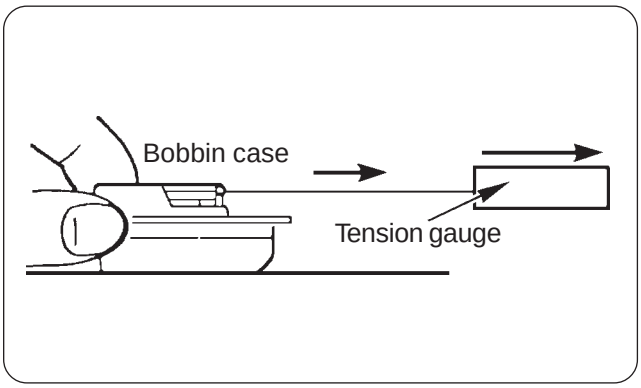


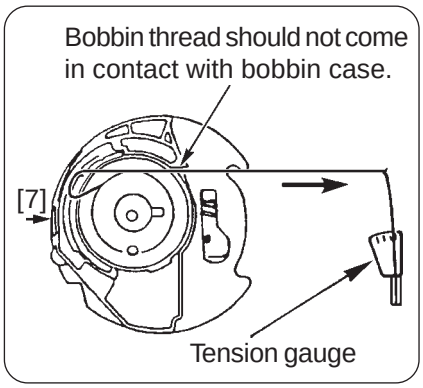


5-1-9 Adjusting the bobbin thread tension

○ Remove the throat plate.

How to adjust 1. Position the bobbin case and the tension gauge as illustrated and adjust the adjusting screw [7] so that the tension is 0.1862±0.0098 [N] (19g±1g) with SHAPPE #60 thread.

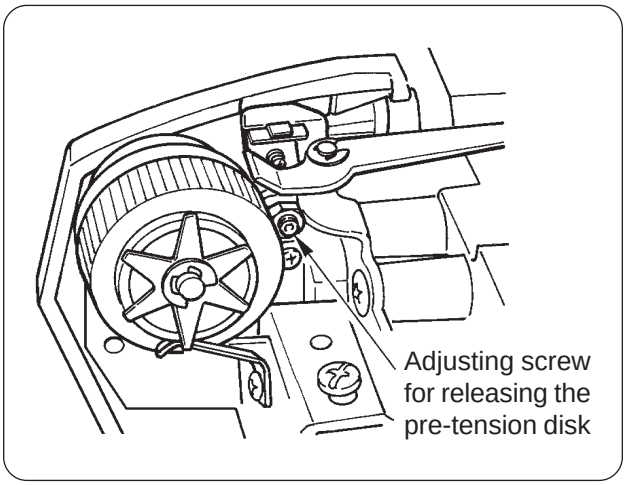


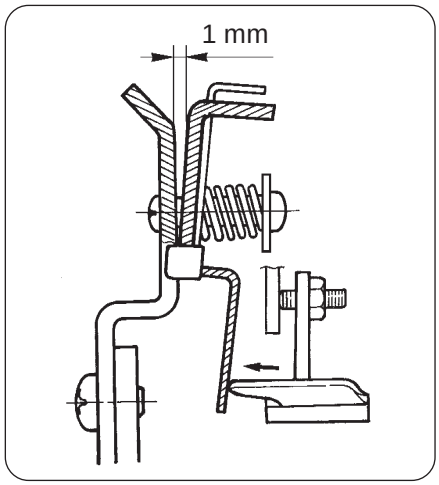


5-1-10 Opening amount of the pre-tension disk

○ Remove the face cover and the front panel.

How to adjust 1. Adjust the adjusting screw for releasing the pre-tension disk so that the pre-tension disk opens approximately 1 mm when the presser lifting lever is raised.
In addition, the tension of the pre-tension is a fixed type and cannot be adjusted.

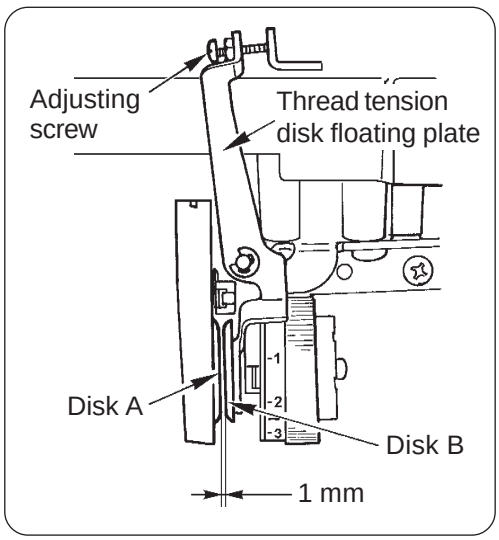




5-1-11 Opening amount of the tension disk

○ Remove the face cover and the front panel.

How to adjust 1. Turn the adjusting screw in the thread tension disk floating plate and adjust so that the clearance between tension disk (A) and tension disk (B) is 1 mm when the thread tension dial is set to the maximum and the presser lifting lever is raised.

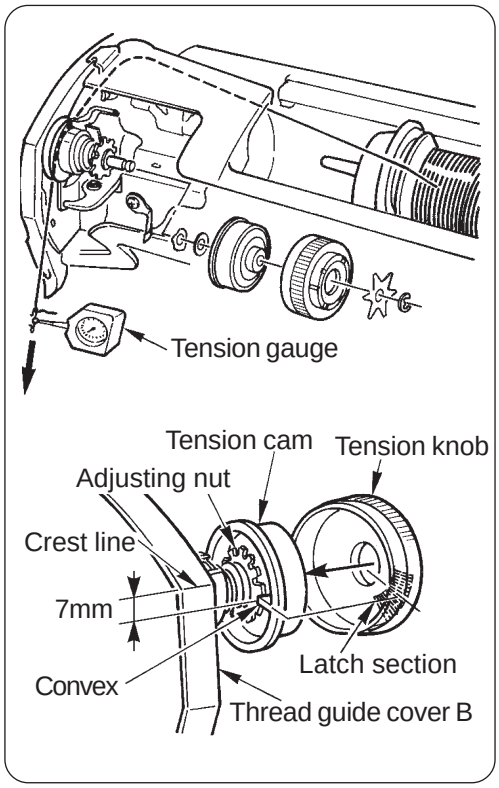


5-1-12 Adjusting the needle thread tension

○ Remove the face cover and the front panel.

How to adjust

1. Remove the tension knob fixing E ring and remove the thread tension dial presser, the tension knob and the tension cam.
2. Prepare SHAPPE SPAN # 60 and the tension gauge, and pass needle thread from the base tension to the tension disk.
3. Lower the presser lifting lever, attach SHAPPE SPAN # 60 to the tension gauge, and turn the adjusting nut to adjust so that the tension is 0.588 [N] (approx. 60 g).
4. After the adjustment, set the tension cam to the groove in the adjusting nut so that the convex of the tension cam is in the position which is lower by approximately 7 mm than the crest line of the thread guide cover B.
5. Fix the tension knob so that the center of the latch section of the tension knob meets with the convex of the tension cam.
6. Fix again the thread tension dial presser and the tension knob fixing E ring.
7. Fix the tension cam positioning plate.



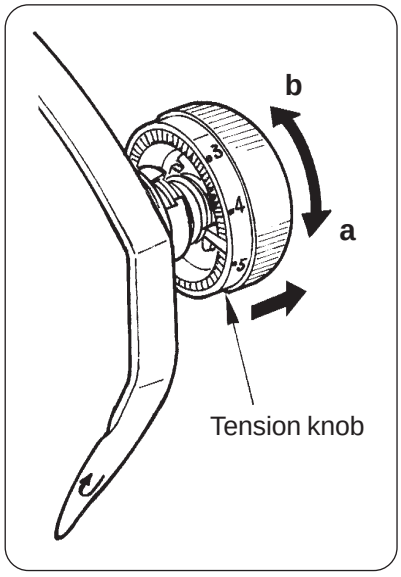
5-1-13 Tension knob

○ The tension knob has the structure which can make the correction when the needle thread tension is desired to be corrected after assembling the front panel and the thread spool cover.

How to adjust

1. In case of increasing the needle thread tension
   1) Turn the tension knob in the direction of “a” until it comes in contact with the stopper.
   2) Move (shift) the tension knob to the right side and the engagement with the tension cam is disengaged. On this condition, turn the tension knob in the direction of “a”.
2. In case of decreasing the needle thread tension
   1) Turn the tension knob in the direction of “b” until it comes in contact with the stopper.
   2) Move (shift) the tension knob to the right side and the engagement with the tension cam is disengaged. In this state, turn the tension knob in the direction of “b”.

* After performing the adjustment of 5-1-12, re-adjust so that the thread tightness ratio is 100 to 108 % with cotton broad cloth and SHAPPE SPAN #60.
Then perform fine adjustment in the 5-1-13 above.

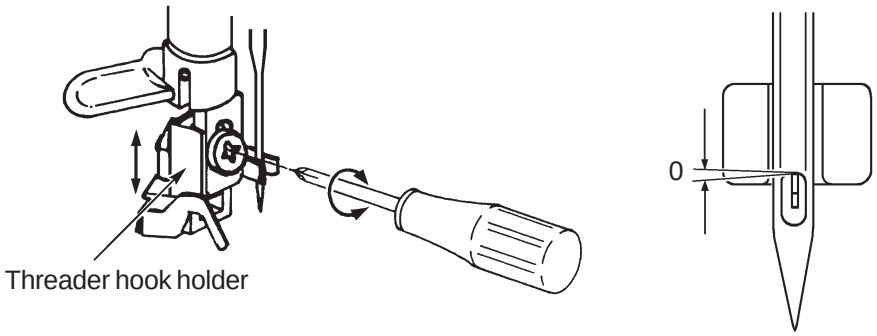


5-1-14 Vertical position of the threader hook

How to adjust

1. Attach a household needle HA X 1 #11.
2. Turn the hand wheel to bring the needle bar near the highest point of its stroke, loosen the setscrew in the threader hook holder and adjust the threader hook holder in the vertical direction.
   When the hook is low ➡ Move the threader hook holder in the upper direction.
   When the hook is high ➡ Move the threader hook holder in the lower direction.
3. Bring the threader lever to the lowest point of its stroke and check that the clearance provided between the upper end of the threader hook and the upper end of the needle eyelet is 0 to 0.1 mm. (When this dimension is not 0 to 0.1 mm, there is a case where the threading cannot be peformed according to the needle size.)
4. Checking the position in terms of the needle eyelet, perform the adjustment.
   When the hook goes in and out the needle eyelet, the needle should not be bent by the hook.
   When the hook shifts in the lateral direction, perform the correction of the bend of the hook using the tip of a small screwdriver or the like, or replace the threader hook holder with a new one.

* The hook has to enter the needle eyelet of needle #11 to #16.

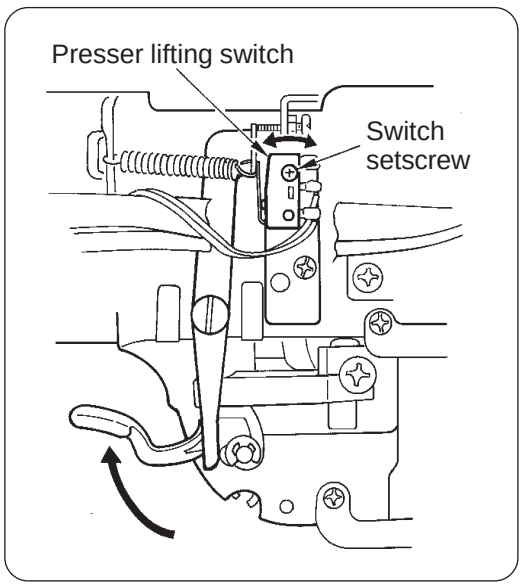


5-1-15 Adjusting the position of the presser lifting switch

○ Remove the face cover, the front panel, the rear panel and the thread spool cover.

How to adjust

1. Adjust the position with the switch setscrews so that the presser lifting switch is turned ON with the presser foot raised.

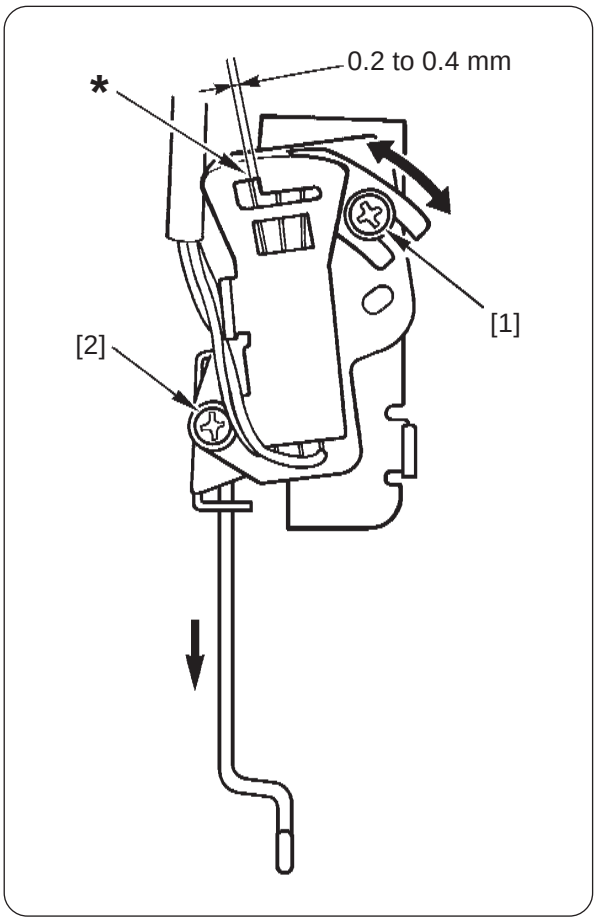


5-1-16 Adjusting the position of the BH switch

○ Remove the face cover.

How to adjust

1. Attach the BH foot and lower the presser foot.
2. Lower the buttonholing.
3. Select BH ( ) with the pattern selector button.
4. Loosen setscrews [1] and [2] in the BH switch base.
5. Move the switch base and adjust so that the clearance with the asterisk mark * is 0.2 to 0.4 mm.
6. Put a sheet of paper under the BH presser, perform idle stitching without threading and check the return position and the stopping position of BH. Perform re-adjustment if there is any trouble.
   If these tests are OK, perform threading and sewing test of BH.



5-1-17 Longitudinal feed

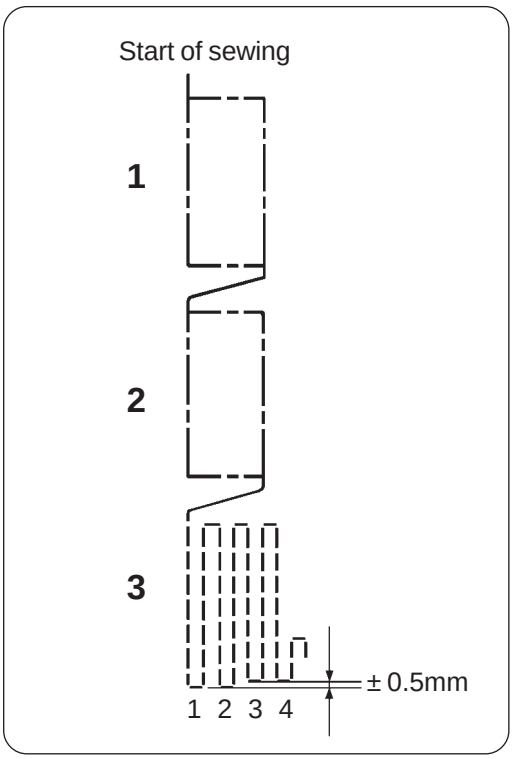
Preparation for adjustment

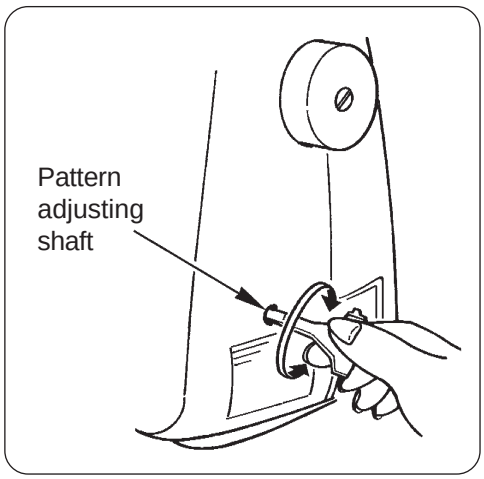
1. After turning the power switch OFF, pressing the reverse button, turn the power switch ON. Then turn the stitch length manual adjustment button ON while the pattern selector LEDs light up in order. Then release your finger in the order of the reverse button and the stitch length manual adjustment button. The pattern changes over to the sewing pattern for darning adjustment. (▤)

How to adjust the sewing conditions

(Program for adjustment)

2. 2-layer cotton broad, SHAPPE #60 (for both needle and bobbin threads),high speed and tension “4”
3. Sew three pieces or more of the sewing pattern of darning stitching under the condi tions of 2. above.
   Turn the pattern adjusting knob to adjust so that at the third sewing pattern, the bottom end of the first return pattern from the left and the bottom end of the third return pattern are on the same line (tolerance ±0.5 mm) as illustrated in the figure below.
4. Sew BH (buttonhole) and check the stitch length.





5-1-18 Service mode

Adjusting the longitudinal feed (Darning stitching)

Power switch OFF → **[1]** Reverse button + **[2]** Power switch ON

+ **[3]** Feed manual switch

5-1-17 Adjusting the amount of longitudinal feed
Pressing **[1]** , turn **[2]** ON, then press **[3]** .
Then release **[1]** after completing lighting up of the pattern LEDs in order.

After completion of selection

Completion of selection of darning pattern with the sound of buzzer “peep”.

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